



“Hundreds of promising technologies are dependent on one resource – spectrum. Because there is a finite amount of spectrum and a growing demand for it, effectively managing the available spectrum is a strategic issue for the FCC and the NTIA”

- Source: FCC Web Site



Wireless Strategies Inc.



[FCC Home](#) [Search](#) [Updates](#) [E-Filing](#) [Initiatives](#) [For Consumers](#) [Find People](#)

Wireless Telecommunications Bureau

[FCC](#) > [WTB Home](#) > [About the WTB](#)

[FCC Site Map](#)

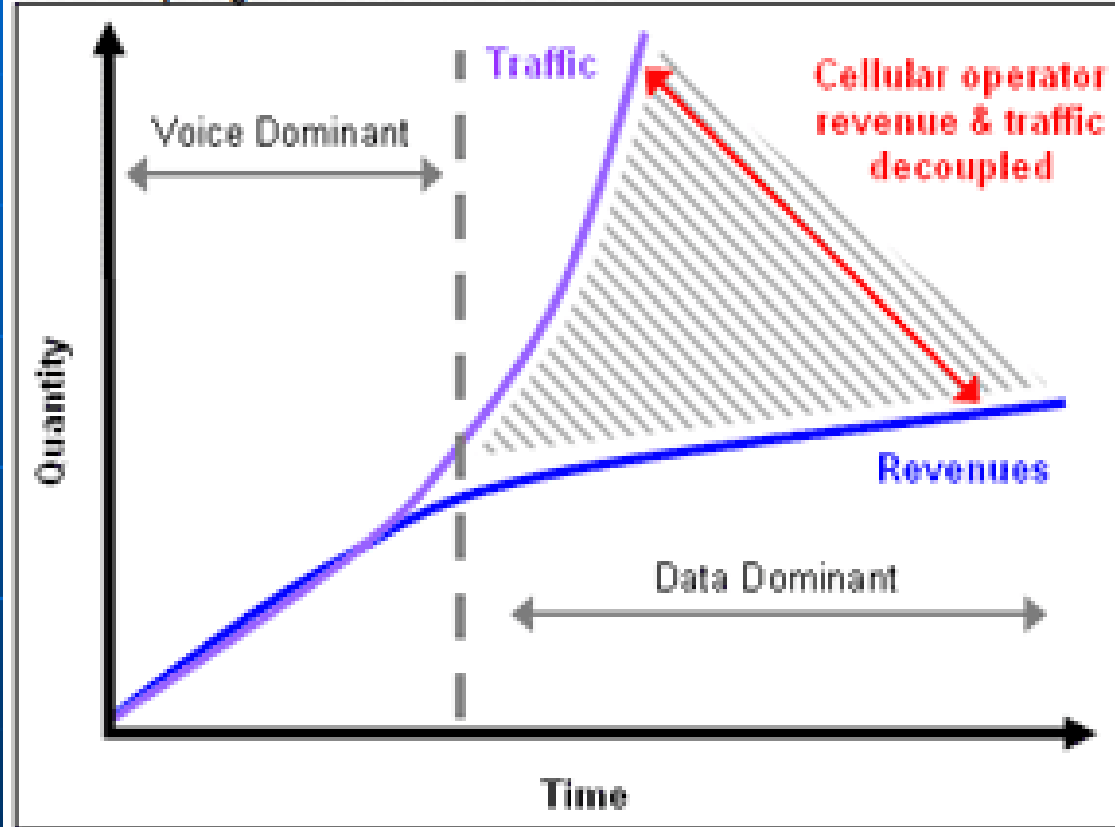
Goals



1. Foster competition among different services.
2. Promote universal service, public safety, and service to individuals with disabilities.
3. Maximize efficient use of spectrum.
4. Develop a framework for analyzing market conditions for wireless services.
5. Minimize regulation where appropriate.
6. Facilitate innovative service and product offerings, particularly by small businesses and new entrants.
7. Serve WTB customers efficiently (including improving licensing, eliminating backlogs, disseminating information and making staff accessible).
8. Enhance consumer outreach and protection; improve enforcement process.

Problems with Legacy Approach

The Coupling of Traffic & Revenue



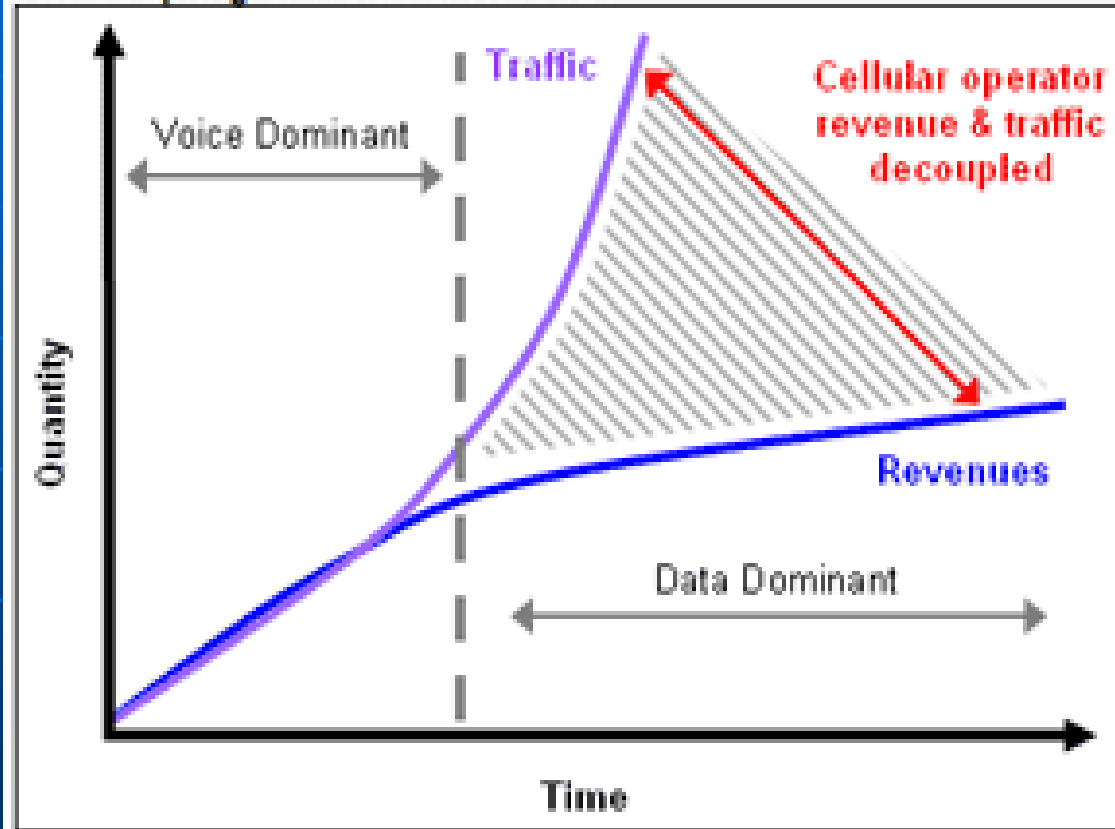
Source: Heavy Reading

**ILEC T1 Carrier and
Frequency Domain Legacy
Microwave is Too
Expensive for Data
Dominant 4G (WiMax)
Backhaul and Broadband
Access and is Wasteful of
Licensed Spectrum.**

Wireless Strategies Inc.

Innovative Solution

The Coupling of Traffic & Revenue



Source: Heavy Reading

The use of Time Domain Microwave to Put to Productive Use the Coordinated Antenna Main Lobe and Side Lobe Radiation thereby Increasing the Effective Use of the Licensed Spectrum and Dramatically Lowering CAPEX and OPEX.

Wireless Strategies Inc.

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of)
)
Request for Declaratory Ruling on) File No. 07-121
Compliance of Fixed Microwave)
Antennas Having Distributed)
Radiating Elements)

REQUEST FOR DECLARATORY RULING

A. Introduction

Recent advances in antenna system design enable a Fixed Services licensee to use otherwise unavailable spectrum, without causing interference to other users, through the use of antennas having distributed radiating elements.

Pursuant to Section 1.2 of the Commission's Rules, Wireless Strategies, Inc. respectfully asks the Commission to issue a declaratory ruling confirming that a Fixed Service licensee is permitted to simultaneously coordinate multiple links whose transmitter elements collectively comply with the Commission's antenna standards¹ and frequency coordination procedures.² The requested ruling is needed to eliminate any uncertainty as to the lawfulness of these methods for enhancing spectrum efficiency by allowing a licensee to reuse the licensed spectrum in a given area.

D. Request for Ruling

Wireless Strategies seeks a ruling that a licensee may use antennas having distributed elements to operate links, in addition to the main link, subject to conditions that (1) all radiating elements together conform to the applicable antenna radiation pattern in Section 101.115, and (2) all links are successfully coordinated

¹ 47 C.F.R. Sec. 101.115.

² 47 C.F.R. Sec. 101.103.

Request for Declaratory Ruling

Pursuant to Section 1.2 of the Commission's Rules, Wireless Strategies, Inc. respectfully asks the Commission to issue a declaratory ruling confirming that a Fixed Service licensee is permitted to simultaneously coordinate multiple links whose transmitter elements collectively comply with the Commission's antenna standards¹ and frequency coordination procedures.² The requested ruling is needed to eliminate any uncertainty as to the lawfulness of these methods for enhancing spectrum efficiency by allowing a licensee to reuse the licensed spectrum in a given area.

[1] 47 C.F.R. Sec. 101.115.

[2] 47 C.F.R. Sec. 101.103.

Request for Declaratory Ruling

Commission asked to confirm

.....Fixed Service licensee is permitted to simultaneously coordinate multiple links.....

Rule 101.103 requires a potential licensee to (concurrently) coordinate all (multiple) interference vectors (each vector is a potential link).

Request for Declaratory Ruling

Pursuant to Section 1.2 of the Commission's Rules, Wireless Strategies, Inc. respectfully asks the Commission to issue a declaratory ruling confirming that a Fixed Service licensee is permitted to simultaneously coordinate multiple links whose transmitter elements collectively comply with the Commission's antenna standards¹ and frequency coordination procedures.² The requested ruling is needed to eliminate any uncertainty as to the lawfulness of these methods for enhancing spectrum efficiency by allowing a licensee to reuse the licensed spectrum in a given area.

[1] 47 C.F.R. Sec. 101.115.

[2] 47 C.F.R. Sec. 101.103.

Request for Declaratory Ruling

The Commission asked to confirm

...these methods for enhancing spectrum efficiency by allowing a licensee to reuse the licensed spectrum in a given area.

The given area is the result of the FCC's mandated prior coordination¹ around the coordinated path's antennas

[1] 47 C.F.R. Sec. 101.103.

Request for Declaratory Ruling

Wireless Strategies seeks a ruling that a licensee may use antennas having distributed elements to operate links, in addition to the main link, subject to conditions that (1) all radiating elements together conform to the applicable antenna radiation pattern in Section 101.115, and (2) all links are successfully coordinated

| | A | B | C | D |
|----|--|------------------------------|--------------------------|--|
| 1 | Ineffective vs Effective Use of Spectrum | | | |
| 2 | | | | |
| 3 | Example | Legacy Design | Innovative Design | Comments |
| 4 | Service to a Single Subscriber | Dumb Legacy Radio | Smart SDR | |
| 5 | | Operating Frequency Division | Operating Time Division | |
| 6 | | | | |
| 7 | | | | |
| 8 | Total Number of Paths | One | One | |
| 9 | | | | |
| 10 | Frequency (V) | One | One | |
| 11 | | | | |
| 12 | 101.115 Directional Antennas | Comply | Comply | 101.115 specifies the electrical performance (RPE) not how the performance is met (size, shape, active, passive, adaptive) thereby promoting innovation. |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | Any type of antenna: Parabolic, Multi-Element, Flat Panel |
| 17 | | | | Flat Panel, Lens, Smart, Adaptive, Dumb, etc, meeting |
| 18 | | | | Category A or Category B of Rule 101.115 is Permitted. |
| 19 | | | | |
| 20 | 101.103 Frequency Coordination Procedures | Comply | Comply | |
| 21 | | | | |
| 22 | | | | |
| 23 | Form 601 Application for WTB Radio Service Authorization | same | same | |
| 24 | | | | |
| 25 | | | | |
| 26 | Radio Station Authorization | Same | Same | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | Rev 100908 |
| 38 | | | | |

| | A | B | C | D |
|----|--|-------------------------------------|--------------------------------|--|
| 1 | Ineffective vs Effective Use of Spectrum | | | |
| 2 | | | | |
| 3 | Example | | | |
| 4 | Service to a Single Subscriber | Legacy Design | Innovative Design | Comments |
| 5 | | Dumb Legacy Radio | Smart SDR | |
| 6 | | Operating Frequency Division | Operating Time Division | |
| 7 | | | | |
| 8 | Total Number of Paths | One | One | |
| 9 | | | | |
| 10 | Frequency (V) | One | One | |
| 11 | | | | |
| 12 | 101.115 Directional Antennas | Comply | Comply | 101.115 specifies the electrical performance (RPE) not how the performance is met (size, shape, active, passive, adaptive) thereby promoting innovation. |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | Any type of antenna: Parabolic, Multi-Element, Flat Panel |
| 17 | | | | Flat Panel, Lens, Smart, Adaptive, Dumb, etc, meeting |
| 18 | | | | Category A or Category B of Rule 101.115 is Permitted. |
| 19 | | | | |
| 20 | 101.103 Frequency Coordination Procedures | Comply | Comply | |
| 21 | | | | |
| 22 | | | | |
| 23 | Form 601 Application for WTB Radio Service Authorization | same | same | |
| 24 | | | | |
| 25 | | | | |
| 26 | Radio Station Authorization | Same | Same | |
| 27 | | | | |
| 28 | Service to Ten Additional Subscribers | | | |
| 29 | | | | |
| 30 | Number of Additional Frequencies (V) | TEN | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |

Rev 130908

| | A | B | C | D |
|----|--|-------------------------------------|--------------------------------|--|
| 1 | Ineffective vs Effective Use of Spectrum | | | |
| 2 | | | | |
| 3 | Example | | | |
| 4 | Service to a Single Subscriber | Legacy Design | Innovative Design | Comments |
| 5 | | Dumb Legacy Radio | Smart SDR | |
| 6 | | Operating Frequency Division | Operating Time Division | |
| 7 | | | | |
| 8 | Total Number of Paths | One | One | |
| 9 | | | | |
| 10 | Frequency (V) | One | One | |
| 11 | | | | |
| 12 | 101.115 Directional Antennas | Comply | Comply | 101.115 specifies the electrical performance (RPE) not how the performance is met (size, shape, active, passive, adaptive) thereby promoting innovation. |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | Any type of antenna: Parabolic, Multi-Element, Flat Panel |
| 17 | | | | Flat Panel, Lens, Smart, Adaptive, Dumb, etc. meeting |
| 18 | | | | Category A or Category B of Rule 101.115 is Permitted |
| 19 | | | | |
| 20 | 101.103 Frequency Coordination Procedures | Comply | Comply | |
| 21 | | | | |
| 22 | | | | |
| 23 | Form 601 Application for WTB Radio Service Authorization | same | same | |
| 24 | | | | |
| 25 | | | | |
| 26 | Radio Station Authorization | Same | Same | |
| 27 | | | | |
| 28 | Service to Ten Additional Subscribers | | | |
| 29 | | | | |
| 30 | Number of Additional Frequencies (V) | TEN | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | 101.103 (2) (d) (ix) | | Complies | |
| 35 | | | | |
| 36 | Number of Additional Frequencies (V) | | ZERO | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |

Rev 130908

Rule 101.103 (2) (d) (ix)

“If, after coordination is successfully completed, it is determined that a subsequent change could have no impact on some parties receiving the original notification, these parties must be notified of the change and of the coordinator’s opinion that no response is required.”

Non-Interference Matrix

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|----|---|---------------|---------------|---------------|------|------|------|------|------|-----|-----|-----|---|---|
| 1 | DRE | 1 | 2 | 3 | | | | | | n-3 | n-2 | n-1 | n | |
| 2 | Identification Number | 100 | 101 | 102 | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | Location Coordinates and Center Line (Note 1) | | | | | | | | | | | | | |
| 5 | Latitude | 39 - 22 - 15N | 39 - 20 - 10N | 39 - 17 - 15N | | | | | | | | | | |
| 6 | Longitude | 76 - 36 - 56W | 76 - 39 - 40W | 76 - 41 - 50W | | | | | | | | | | |
| 7 | Ground Elevation AMSL | 22m | 15m | 18m | | | | | | | | | | |
| 8 | Radiator Center Line AGL | 23.1m | 36.5m | 24.0m | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | Frequency | 6123.10MHz | 6123.10MHz | 6123.10MHz | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | Polarization | Vert | Vert | Vert | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | Transmitter | | | | | | | | | | | | | |
| 15 | Part Number | EX-6i-T | EX-6i-T | EX-6i-T | | | | | | | | | | |
| 16 | Stability | 0.001% | 0.001% | 0.001% | | | | | | | | | | |
| 17 | Emission Designator | 30MOD7W | 30MOD7W | 30MOD7W | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | Max Output Power (Note 2) | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | DRE Radiation Pattern Envelope | Attached | Attached | Attached | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | DRE Receiving Site | | | | | | | | | | | | | |
| 24 | Location Coordinates and Center Line(Note 1) | | | | | | | | | | | | | |
| 25 | Latitude | 39 - 17 - 15N | 39 - 17 - 15N | 39 - 17 - 15N | | | | | | | | | | |
| 26 | Longitude | 76 - 36 - 56W | 76 - 36 - 56W | 76 - 36 - 56W | | | | | | | | | | |
| 27 | Vertical (AMSL) | 166m | 166m | 166m | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | Note 1. Position location will be within +/-1 second in the horizontal dimensions (latitude and longitude) and +/- 1 meter in the vertical dimension (ground elevation) relative to the | | | | | | | | | | | | | |
| 30 | National Reference Spatial Reference System. | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 32 | Note 2a. Maximum output power at input of the radiator that will not cause harmful interference. | | | | | | | | | | | | | |
| 33 | Note 2b. The following DRE related licensed paths will accept interference: | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |

| | A | B | C | D |
|----|--|-------------------------------------|--------------------------------|--|
| 1 | Ineffective vs Effective Use of Spectrum | | | |
| 2 | | | | |
| 3 | Example | | | |
| 4 | Service to a Single Subscriber | Legacy Design | Innovative Design | Comments |
| 5 | | Dumb Legacy Radio | Smart SDR | |
| 6 | | Operating Frequency Division | Operating Time Division | |
| 7 | | | | |
| 8 | Total Number of Paths | One | One | |
| 9 | | | | |
| 10 | Frequency (V) | One | One | |
| 11 | | | | |
| 12 | 101.115 Directional Antennas | Comply | Comply | 101.115 specifies the electrical performance (RPE) not how the performance is met (size, shape, active, passive, adaptive) thereby promoting innovation. |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | Any type of antenna: Parabolic, Multi-Element, Flat Panel |
| 17 | | | | Flat Panel, Lens, Smart, Adaptive, Dumb, etc. meeting |
| 18 | | | | Category A or Category B of Rule 101.115 is Permitted |
| 19 | | | | |
| 20 | 101.103 Frequency Coordination Procedures | Comply | Comply | |
| 21 | | | | |
| 22 | | | | |
| 23 | Form 601 Application for WTB Radio Service Authorization | same | same | |
| 24 | | | | |
| 25 | | | | |
| 26 | Radio Station Authorization | Same | Same | |
| 27 | | | | |
| 28 | Service to Ten Additional Subscribers | | | |
| 29 | | | | |
| 30 | Number of Additional Frequencies (V) | TEN | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | 101.103 (2) (d) (ix) | | Complies | |
| 35 | | | | |
| 36 | Number of Additional Frequencies (V) | | ZERO | |
| 37 | | | | |
| 38 | | | | |
| 39 | | | | |

Rev 130908



[FCC Home](#) [Search](#) [Updates](#) [E-Filing](#) [Initiatives](#) [For Consumers](#) [Find People](#)

Wireless Telecommunications Bureau

[FCC](#) > [WTB Home](#) > About the WTB

[FCC Site Map](#)

Goals



1. Foster competition among different services.
2. Promote universal service, public safety, and service to individuals with disabilities.
3. Maximize efficient use of spectrum.
4. Develop a framework for analyzing market conditions for wireless services.
5. Minimize regulation where appropriate.
6. Facilitate innovative service and product offerings, particularly by small businesses and new entrants.
7. Serve WTB customers efficiently (including improving licensing, eliminating backlogs, disseminating information and making staff accessible).
8. Enhance consumer outreach and protection; improve enforcement process.



[FCC Home](#) [Search](#) [Updates](#) [E-Filing](#) [Initiatives](#) [For Consumers](#) [Find People](#)

Wireless Telecommunications Bureau

[FCC](#) > [WTB Home](#) > [About the WTB](#)

[FCC Site Map](#)

Goals

1. Foster competition among different services.
2. Promote universal service, public safety, and service to individuals with disabilities.
3. Maximize efficient use of spectrum.
4. Develop a framework for analyzing market conditions for wireless services.
5. Minimize regulation where appropriate.
6. Facilitate innovative service and product offerings, particularly by small businesses and new entrants.
7. Serve WTB customers efficiently (including improving licensing, eliminating backlogs, disseminating information and making staff accessible).
8. Enhance consumer outreach and protection; improve enforcement process.



Dates and Activities

- February 23, 2007

WSI Files a Request for a Declaratory Ruling

- July 19, 2007

WTB issued a Public Notice

- August 20, 2007

Reply Comments Date

- September 16, 2008

Awaiting a Ruling by the Commission

Wireless Strategies Inc.